

# इंटरनेट

# मानक

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IS 8919 (2007): Modular units for machine tool construction  
- Spindle noses and adjustable adaptors for multi spindle  
heads [PGD 32: Cutting tools]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक  
मशीन औजार निर्माण के लिए मॉड्यूलर इकाईयाँ —  
बहु स्पिंडल शीर्षों के लिए स्पिंडल नोज और  
समायोजनीय एडाप्टर  
( पहला पुनरीक्षण )

*Indian Standard*  
MODULAR UNITS FOR MACHINE TOOL  
CONSTRUCTION — SPINDLE NOSES AND  
ADJUSTABLE ADAPTORS FOR MULTI  
SPINDLE HEADS  
( *First Revision* )

ICS 25.060.10

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 2905 : 1985 'Modular units for machine tool construction — Spindle noses and adjustable adaptors for multi-spindle heads' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Drills, Reamers and Threading Tools Sectional Committee and approval of the Production and General Engineering Division Council.

This standard was first published in 1978 in four parts covering the requirements of short adaptors, long adaptors, extra long adaptors and clamping nuts in line with ISO 2905 : 1974. After the revision of corresponding ISO Standard, IS 8919 (Part 1) : 1978 'Specification for adjustable adaptors for tools with self holding taper shanks: Part 1 Short Adaptors', IS 8919 (Part 2) : 1978 'Specification for adjustable adaptors for tools with self holdings taper shanks: Part 2 Long adaptors', IS 8919 (Part 3) : 1978 'Specification for adjustable adaptors for tools with self holdings taper shanks: Part 3 Extra long adaptors' and IS 8919 (Part 4) : 1978 'Specification for adjustable adaptors for tools with self holding taper shanks: Part 4 Clamping nuts' have been amalgamated in one standard covering all the requirements.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their places are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 2901 : 1993 ISO metric trapezoidal screw threads — Basic profile and maximum material profiles	IS 7008 (Part 1) : 1999 ISO metric trapezoidal screw threads: Part 1 Basic profile and maximum material profiles	Identical
ISO 2903 : 1993 ISO metric trapezoidal screw threads — Tolerances	IS 7008 (Part 4) : 1999 ISO metric trapezoidal screw threads: Part 4 Tolerances	do

The technical committee responsible for the formulation of this standard has reviewed the provisions of the following International Standard referred in this adopted standard and has decided that the same is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 296 : 1991	Machine tools — Self holding taper for tool shanks

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

**MODULAR UNITS FOR MACHINE TOOL  
CONSTRUCTION — SPINDLE NOSES AND  
ADJUSTABLE ADAPTORS FOR MULTI  
SPINDLE HEADS**

*( First Revision )*

## **1 Scope and field of application**

This International Standard specifies dimensions for spindle noses for use with adjustable adaptors and quick-change adaptors used in multi-spindle heads.

It specifies requirements for three types of adjustable adaptors to fit taper shank drills, reamers and spot-facing cutters, used in multi-spindle heads.

## **2 References**

ISO 296, *Machine tools — Self-holding tapers for tool shanks.*

ISO 2901, *ISO metric trapezoidal screw threads — Basic profile and maximum material profiles.*

ISO 2903, *ISO metric trapezoidal screw threads — Tolerances.*

## **3 Spindle noses**

### **3.1 Nominal sizes**

The nominal size of the spindle nose shall be its nominal bore, which shall be identical with the nominal diameter of the adjustable adaptor with which it is to be used.

The range of nominal sizes is as follows :

8, 10, 12, 16, 20, 25, 28, 36 and 48 mm

### **3.2 Interchangeability**

Spindle noses shall be capable of accepting adjustable adaptors manufactured in accordance with clause 4.

### **3.3 Dimensions**

Dimensions shall comply with those given in table 1.

### **3.4 Locking screw**

For reasons of safety, it is important that the locking screw when tightened does not protrude beyond the outside diameter of the spindle nose. Locking screws are therefore to be reduced in length if necessary; this correction should be carried out when the position of the adjustable adaptor in the spindle nose corresponds with the maximum wear of the tool.

## **4 Adjustable adaptors**

### **4.1 Nominal sizes**

The nominal size of an adaptor shall be its nominal outside diameter, which shall be identical with the nominal bore of the spindle nose with which it is to be used.

The range of nominal sizes is as follows :

8, 10, 12, 16, 20, 25, 28, 36 and 48 mm.

### **4.2 Interchangeability**

Adaptors shall be capable of fitting spindle noses manufactured in accordance with clause 3.

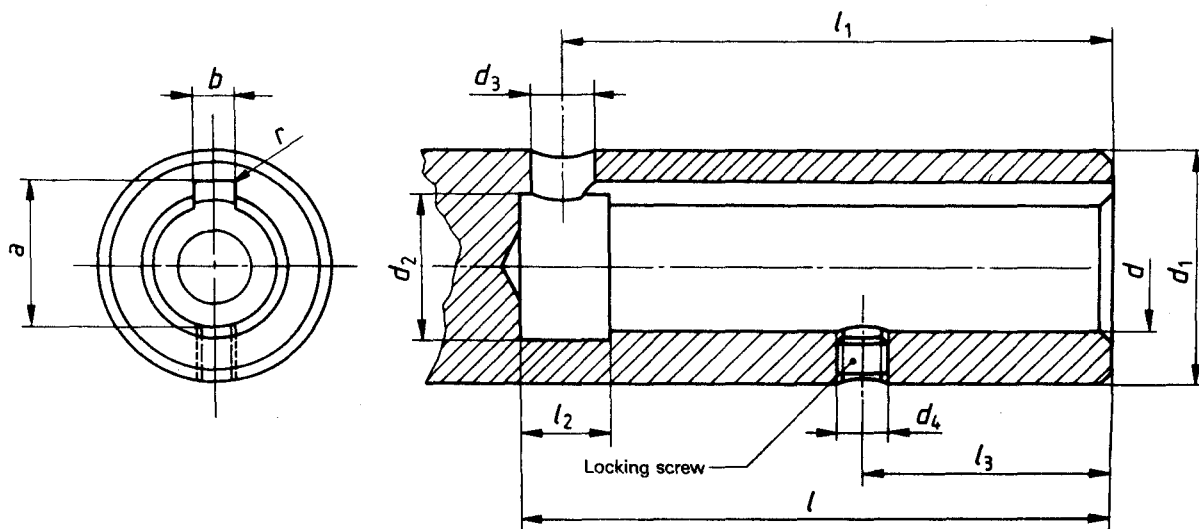


Table 1

Dimensions in millimetres

$d$ H7	$a$ $+0,3$ 0	$b$ C11	$d_1^{1)}$	$d_2^{2)}$	$d_3$	$d_4$ 6H	$l$ min.	$l_1$	$l_2$	$l_3$ $\pm 0,1$	$r$ max.	Locking screw
8	9	2	15	8,6	3,5	M4	42	35	8	16	0,2	M4 - 5
10	11	3	18	10,6	5	M5	52	48	8	22	0,2	M5 - 5
12	13	3	20	12,6	5	M5	52	48	8	22	0,2	M5 - 5
16	17,3	5	25	16,4	6	M6	74	70	8	34	0,2	M6 - 6
20	21,3	5	32	20,4	6	M6	77	73	8	34	0,2	M6 - 6
25	26,7	6	37	25,4	8	M8	85	80	10	38	0,4	M8 - 6
28	29,7	6	40	28,4	8	M8	85	80	10	38	0,4	M8 - 8
36	37,7	8	50	36,6	10	M8	106	101	10	45	0,4	M8 - 8
48	50,1	10	67	48,6	12	M10	129	123	12	57	0,4	M10 - 10

1) For nominal diameters 8 to 12, diameter  $d_1$  depends on the design requirements; the values are therefore given for information only.

For nominal diameters 16 to 48, the tolerance on  $d_1$  is f7 only if quick-change adaptors are to be used.

2) These values are given for information only.

#### 4.3 Dimensions

Dimensions shall comply with those given in tables 2 and 3.

#### 4.4 Threads

Threads shall comply with ISO 2901 and ISO 2903, except in the case of special material requirements for the major diameter on which the tolerance shall be g6 and for the pitch of 1 mm provided for the nominal size of 8 mm.

#### 4.5 Bore taper

The bore of the adaptor body shall be tapered in accordance with ISO 296.

#### 4.6 Drift slot

The drift slot of the appropriate self-holding taper complying with ISO 296 shall be provided 90° from the Woodruff key.

#### 4.7 Locking screw (for nominal diameters 16 to 48)

For reasons of safety, it is important that the locking screw when tightened does not protrude beyond the outside diameter of the knurled portion of the nut. Locking screws are therefore to be reduced in length if necessary so that they do not protrude when the nut is locked.

#### 4.8 Lead-in of the adjustable adaptors in the spindle noses

For types A and B, a suitable form of lead-in shall be machined on the closed end of the adaptor body, to facilitate insertion into the spindle nose.

#### 4.9 Marking

The body of the adaptor shall be marked with the type, nominal size, size of Morse taper and, for type B adaptors only, the extension length.

*Examples :* A 10/Metr. 6

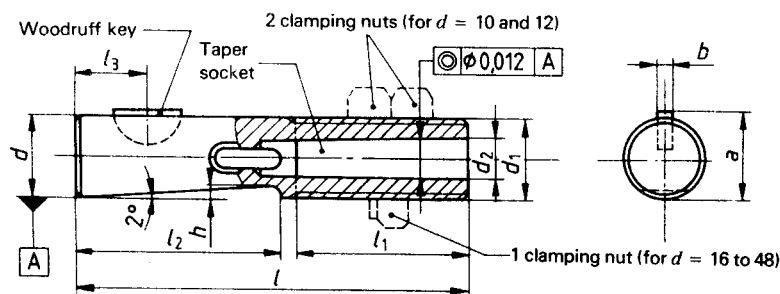
B 20/1/50

C 28/3



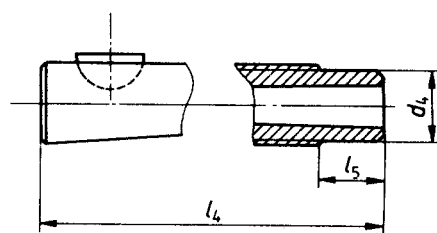
Dimensions and tolerances in millimetres

**Type A — Short**



**Type B — Long**

For other dimensions, see type A



**Table 2**

Dimensions in millimetres

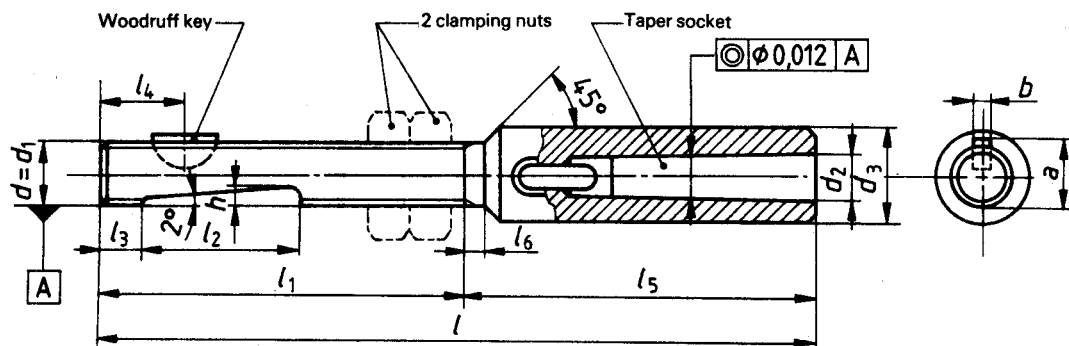
$d$ g6	$d_1^*$	Taper	$d_2$ Basic diameter	$a$ tol.	$b$ P9/h9	$h$ max.	$l$	$l_1$	$l_2$	$l_3$	$d_4$	$l_4$	$l_5$	Woodruff key	Range of adjustment
10	Tr 10 × 1,5	Metr. No. 6	6	10,9	$\begin{smallmatrix} 0 \\ -0,15 \end{smallmatrix}$	3	1	62	28	32	10	8	$\begin{smallmatrix} 72 & 10 \\ 82 & 20 \\ 92 & 30 \end{smallmatrix}$	3 × 5	16
12	Tr 12 × 1,5	Metr. No. 6	6	12,9	$\begin{smallmatrix} 0 \\ -0,20 \end{smallmatrix}$	3	1	62	28	32	10	10	$\begin{smallmatrix} 72 & 10 \\ 82 & 20 \\ 92 & 30 \\ 102 & 40 \end{smallmatrix}$	3 × 5	16
16	Tr 16 × 1,5	Morse No. 0 or 1	9,045 or 12,065	17,1	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	5	1,3	85	40	43	11	14	$\begin{smallmatrix} 110 & 25 \\ 135 & 50 \\ 160 & 75 \\ 185 & 100 \end{smallmatrix}$	5 × 6,5	28
20	Tr 20 × 2	Morse No. 1	12,065	21,1	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	5	1,3	88	40	46	13	17	$\begin{smallmatrix} 113 & 25 \\ 138 & 50 \\ 163 & 75 \\ 188 & 100 \end{smallmatrix}$	5 × 7,5	28
25	Tr 25 × 2	Morse No. 1 or 2	12,065 or 17,780	26,5	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	6	1,5	95	42	51	15	22	$\begin{smallmatrix} 120 & 25 \\ 145 & 50 \\ 170 & 75 \\ 195 & 100 \end{smallmatrix}$	6 × 9	30
28	Tr 28 × 2	Morse No. 1 or 2	12,065 or 17,780	29,5	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	6	1,5	95	42	51	15	25	$\begin{smallmatrix} 120 & 25 \\ 145 & 50 \\ 170 & 75 \\ 195 & 100 \end{smallmatrix}$	6 × 9	30
36	Tr 36 × 2	Morse No. 2 or 3	17,780 or 23,825	37,5	$\begin{smallmatrix} 0 \\ -0,35 \end{smallmatrix}$	8	1,7	118	50	65	20	33	$\begin{smallmatrix} 148 & 30 \\ 178 & 60 \\ 208 & 90 \\ 238 & 120 \end{smallmatrix}$	8 × 11	36
48	Tr 48 × 2	Morse No. 3 or 4	23,825 or 31,267	49,9	$\begin{smallmatrix} 0 \\ -0,35 \end{smallmatrix}$	10	2,2	144	65	76	24	45	$\begin{smallmatrix} 184 & 40 \\ 224 & 80 \\ 264 & 120 \\ 304 & 160 \end{smallmatrix}$	10 × 13	47

\* Tolerance g6 on the major diameter.

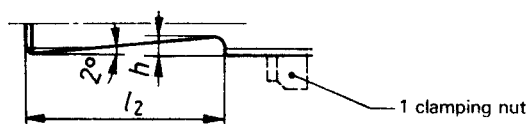
Dimensions and tolerances in millimetres

**Type C — Extra long**

$d = 8$  to  $12$



$d = 16$  to  $36$



**Table 3**

Dimensions in millimetres

$d$	$d_1$	$d_2$		$d_3$	$a$		$b$	$h$	$l$	$l_1$	$l_2$	$l_3$	$l_4$	$l_5$	$l_6$	Woodruff key	Range of adjustment
g6		Taper	Basic diameter			tol.	P9/h9	max.									
8	Tr 8 × 1	Metr. No. 6	6	12	8,8	$\begin{smallmatrix} 0 \\ -0,1 \end{smallmatrix}$	2	1,5	96	50	22	4	10	46	2	2 × 3,7	12
10	Tr 10 × 1,5	Morse No. 0	9,045	18	10,9	$\begin{smallmatrix} 0 \\ -0,15 \end{smallmatrix}$	3	2	135	62	28	4	10	73	3	3 × 5	16
12	Tr 12 × 1,5	Morse No. 0	9,045	18	12,9	$\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	3	2	135	62	28	4	10	73	3	3 × 5	16
16	Tr 16 × 1,5	Morse No. 2	17,780	28	17,1	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	5	1,3	182	88	43	—	11	94	3	5 × 6,5	28
20	Tr 20 × 2	Morse No. 2	17,780	28	21,1	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	5	1,3	182	88	46	—	13	94	3	5 × 7,5	28
25	Tr 25 × 2	Morse No. 3	23,825	36	26,5	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	6	1,5	212	95	51	—	15	117	3	6 × 9	30
28	Tr 28 × 2	Morse No. 3	23,825	36	29,5	$\begin{smallmatrix} 0 \\ -0,25 \end{smallmatrix}$	6	1,5	212	95	51	—	15	117	3	6 × 9	30
36	Tr 36 × 2	Morse No. 4	31,267	48	37,5	$\begin{smallmatrix} 0 \\ -0,35 \end{smallmatrix}$	8	1,7	264	118	65	—	20	146	3	8 × 11	36

## 5 Clamping nuts

Dimensions and tolerances in millimetres

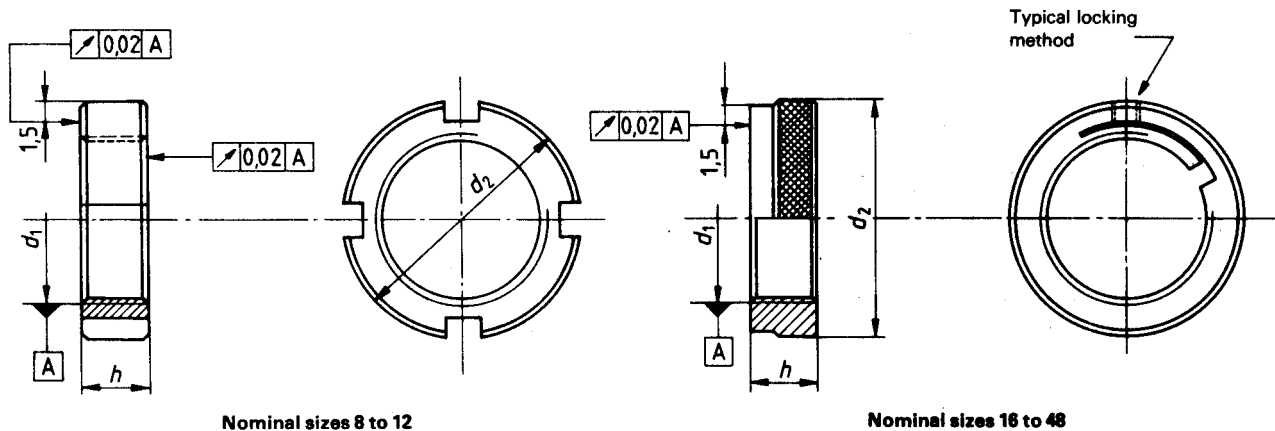


Table 4

Dimensions in millimetres

Nominal size	Thread $d_1$	$d_2$	$h$
8	Tr 8 × 1	14,8 <sup>0</sup> <sub>-0,2</sub>	5
10	Tr 10 × 1,5	17,8 <sup>0</sup> <sub>-0,2</sub>	6
12	Tr 12 × 1,5	19,7 <sup>0</sup> <sub>-0,2</sub>	6
16	Tr 16 × 1,5	24,6	12
20	Tr 20 × 2	31,6	12
25	Tr 25 × 2	36,6	12
28	Tr 28 × 2	39,6	12
36	Tr 36 × 2	49,6	14
48	Tr 48 × 2	66,6	18

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## Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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